

200314645-1

10/757,104

REMARKS

This is a full and timely response to the non-final Official Action mailed **September 27, 2007** (the "Action" or "Office Action"). Reconsideration of the application in light of the following remarks is respectfully requested.

Claim Status:

Claims 9, 22 and 55-62 have been cancelled previously without prejudice or disclaimer. The present paper does not add or cancel any claims.

Consequently, claims 1-8, 10-21, 23-54 and 63 are currently pending for further action.

Drawings:

The recent Office Action requests that Applicant label Fig. 1 as "Prior Art." According to the Office Action, "only that which is old is illustrated" in Fig. 1. (Action, p. 2). Applicant disagrees.

Applicant has not designated or described Fig. 1 as representing the prior art. To the contrary, the discussion of Fig. 1 is in the "Detailed Description" portion of Applicant's specification, not the background. Moreover, Applicant's specification expressly states that "Fig. 1 is a cross-sectional view illustrating a DLD pixel cell *according to one exemplary embodiment.*" (Applicant's specification, paragraph 0006) (emphasis added).

The recent Office Action provides no evidence to support the contention that Fig. 1 illustrates prior art. More importantly, the recent Office Action provides no evidence to support the contention that Applicant has, or intended to, admit Fig. 1 as prior art. There is absolutely no reason on the record to categorize Fig. 1 as "prior art" and certainly no basis to

200314645-1

10/757,104

consider Fig. 1 "admitted" prior art. This is particularly true given the provisions of 35 U.S.C. § 103 (c).

Consequently, until it is established on the record that Fig. 1 illustrates only prior art, Applicant respectfully declines to so label the figure.

35 U.S.C. § 112, Second Paragraph:

Claims 25 and 26 were rejected under 35 U.S.C. § 112, second paragraph, based on a particular recitation that allegedly lacked antecedent basis in claim 25. These claims have been carefully reviewed in light of the Examiner's comments.

While Applicant does not necessarily agree that these claims were indefinite as filed, claim 25 has been amended herein to address the issues raised by the Examiner under 35 U.S.C. § 112, second paragraph. This amendment does not, and is not intended to, change or narrow the scope of the claims in any degree. Following this amendment, all the remaining claims are believed to be in compliance with 35 U.S.C. § 112 and notice to that effect is respectfully requested.

Prior Art:

Claims 1, 12, 13, 24 and 31 were rejected as being unpatentable under 35 U.S.C. § 103(a) over what the Action characterizes as Applicant's Admitted Prior Art ("APA") in combination with the teachings of U.S. Patent No. 7,197,225 to Romo et al. ("Romo"). For at least the following reasons, this rejection should be reconsidered and withdrawn.

This rejection fails because Applicant has not "admitted" as prior art the subject matter so designated erroneously by the Office Action. According to the Office Action,

200314645-1

10/757,104

Applicant's Fig. 1 is admitted prior art. However, there is absolutely no basis for this misguided allegation.

As noted above, Applicant has not designated or described Fig. 1 as representing the prior art. To the contrary, the discussion of Fig. 1 is in the "Detailed Description" portion of Applicant's specification, not the background. Moreover, Applicant's specification expressly states that "Fig. 1 is a cross-sectional view illustrating a DLD pixel cell *according to one exemplary embodiment.*" (Applicant's specification, paragraph 0006) (emphasis added).

The Office Action fails to cite any basis for considering Applicant's Fig. 1 as "admitted prior art." Consequently, the Action fails to establish that the "art" relied upon is, in fact, valid prior art. Therefore, the Action has failed to make out any *prima facie* case of unpatentability under 35 U.S.C. § 103(a) with respect to claims 1, 12, 13, 24 and 31.

Moreover, even if Fig. 1 were established as representing valid prior art, the teachings of Fig. 1 and Romo still fail to render obvious the subject matter recited in Applicant's claims.

Specifically, claim 1 recites:

A diffractive light device (DLD) comprising:
a substrate;
a force plate disposed on said substrate, said force plate configured to produce an electrostatic force in response to an applied voltage;
a pixel plate supported by a flexure adjacent to said force plate, wherein a position of said pixel plate is controlled by said electrostatic force and by said flexure coupled to said pixel plate to display a pixel of an image;
a temperature sensor thermally coupled to said flexure, without affecting movement of said flexure, and outputting a thermal measurement indicative of a temperature of said flexure; and
a circuit that generates and applies a temperature compensated voltage to said force plate in response to said thermal measurement produced by said temperature sensor.

Thus, claim 1 recites a DLD that comprises a force plate that controls, by electrostatic force, the position of a pixel plate supported by a flexure. Claim 1 further recites a

200314645-1

10/757,104

temperature sensor “outputting a thermal measurement indicative of a temperature of said flexure” and “a circuit that generates and applies a temperature compensated voltage to said force plate in response to said thermal measurement produced by said temperature sensor.” This subject matter is outside the scope and content of the prior art.

According to the Office Action, the “APA does not expressly disclose a temperature sensor or compensating the applied voltage based on thermal measurements produced by a temperature sensor.” (Action, p. 3). Consequently, the Action cites to Romo. However, Romo also fails to teach a temperature sensor in connection with a flexure supporting a pixel plate of a DLD. And, because the APA has not been established as valid prior art, Romo stands alone to support this rejection.

Romo teaches two optical waveguides that are variably deflected into misalignment to obtain a desired degree of attenuation of an optical signal propagating between the two waveguides. (Romo, abstract). Romo does not teach, suggest or even mention a pixel plate and has nothing to do with a DLD. Romo does mention “a temperature compensation coefficient that is used in determining the movable cantilever position [of a waveguide] necessary for a given optical attenuation.” (Romo, col. 9, line 66-col. 10, line 4). However, Romo still does not teach or suggest the claimed temperature sensor *in connection with a flexure supporting a pixel plate of a DLD*. Specifically, Romo does not teach or suggest “a temperature sensor thermally coupled to said [pixel plate] flexure, without affecting movement of said flexure, and outputting a thermal measurement indicative of a temperature of said flexure.”

Under the analysis required by *Graham v. John Deere*, 383 U.S. 1 (1966), the scope and content of the prior art must first be determined, followed by an assessment of the differences between the prior art and the claim at issue. In the present case, no valid prior art

200314645-1

10/757,104

cited, including Romo, teaches or suggests a temperature sensor “outputting a thermal measurement indicative of a temperature of said flexure” supporting a pixel plate of a DLD and “a circuit that generates and applies a temperature compensated voltage to said force plate in response to said thermal measurement produced by said temperature sensor.” This subject matter is outside the scope and content of the prior art as evidenced by Romo. Given this significant difference between the scope of the prior art and the claimed subject matter, the rejection of claim 1 and its dependent claims should be reconsidered and withdrawn.

Moreover, claim 1 recites that the temperature sensor is “thermally coupled to said flexure, without affecting movement of said flexure, and outputting a thermal measurement indicative of a temperature of said flexure.” (Emphasis added). This additional subject matter is not taught or suggested by, and is outside the scope of, the cited prior art.

For any and all of these reasons, the cited prior art cannot support a rejection of claim 1 under 35 U.S.C. § 103(a) and *Graham*. Therefore, the rejection of claim 1 and its dependent claims should be reconsidered and withdrawn.

Claim 12 recites:

A micro-electro mechanical system (MEMS) comprising:
a substrate;
a pixel plate coupled to said substrate;
a force plate disposed on said substrate adjacent to said pixel plate, wherein said force plate is configured to exert an electrostatic force on said pixel plate; and
a temperature sensor thermally coupled to said MEMS;
wherein said MEMS is configured to adjust said electrostatic force in response to a temperature measurement performed by said temperature sensor.

In contrast, as demonstrated above, the teachings of Romo do not include or provide for a temperature sensor in connection with a pixel plate, “wherein said MEMS is configured to adjust said electrostatic force [on said pixel plate] in response to a temperature

200314645-1

10/757,104

measurement performed by said temperature sensor.” For at least these reasons, the rejection of claim 12 and its dependent claims should be reconsidered and withdrawn.

Independent claim 24 recites:

An image display device comprising:
a system controller;
a variable voltage source communicatively coupled to said system controller;

and

an array of DLDs communicatively coupled to said variable voltage source, each DLD of said DLD array including a substrate, a force plate disposed on said substrate, said force plate configured to produce an electrostatic force in response to a voltage applied by said voltage source, a pixel plate disposed adjacent to said force plate, wherein a position of said pixel plate is determined by said electrostatic force and a flexure coupled to said pixel plate, and a temperature sensor thermally coupled to said DLD so as to determine a temperature of said flexure, *wherein said image display device is configured to vary said electrostatic force in response to a temperature measurement performed by said temperature sensor.*

(Emphasis added).

In contrast, as demonstrated above, the teachings of Romo do not include or provide for a temperature sensor in connection with a pixel plate, “wherein said image display device is configured to vary said electrostatic force [positioning the pixel plate] in response to a thermal measurement performed by said temperature sensor.” Moreover, the teachings of Romo do not include or provide for a temperature sensor “thermally coupled to said DLD so as to determine a temperature of said flexure.” For at least these reasons, the rejection of claim 24 and its dependent claims should be reconsidered and withdrawn.

Claim 31 recites:

A diffractive light device (DLD) comprising:
a substrate;
a means for producing an electrostatic force disposed on said substrate,
wherein said electrostatic force is produced in response to an applied voltage;

200314845-1

10/757,104

a means for diffracting light disposed adjacent to said electrostatic force producing means, wherein a position of said light diffracting means is influenced by a means for flexing coupled to said means for diffracting light; and

a means for sensing temperature thermally coupled to said DLD, *wherein said means for sensing temperature is configured to produce a temperature compensated voltage on said means for producing an electrostatic force in response to a thermal measurement.*

(Emphasis added).

In contrast, as demonstrated above, the teachings of Romo do not include or provide for a means for sensing temperature thermally coupled to a DLD, "wherein said means for sensing temperature is configured to produce a temperature compensated voltage on said means for producing an electrostatic force in response to a thermal measurement." For at least these reasons, the rejection of claim 31 and its dependent claims should be reconsidered and withdrawn.

Claims 2, 3, 5-8, 14-16, 18-21, 25, 26, 28, 29, 32, 33, 35-38, 56 and 63 were rejected under 35 U.S.C. § 103(a) over the combined teachings of the APA, Romo and U.S. Patent No. 5,088,806 to McCartney et al. ("McCartney"). This rejection is respectfully traversed for the reasons given above with respect to the patentability of the independent claims 1, 12, 24 and 31, and for the following additional reasons.

Claim 2 recites:

an offset voltage generator, wherein said offset voltage generator is configured to generate a temperature compensated offset voltage based on said thermal measurement; and

a summing element for adding said offset voltage to a reference voltage to produce said temperature compensated voltage.

Support for the amendment to claim 2 can be found in Applicant's originally filed specification at, for example, Fig. 3 and the associated text.

200314645-1

10/757,104

In contrast, the combination of cited prior art fails to teach or suggest this subject matter. The Office Action concedes that APA and Romo fail to teach or suggest the claimed offset voltage generator. (Action, p. 7). Consequently, the action cites to McCartney on this point. (*Id.*).

McCartney is directed to a liquid crystal display (LCD). According to McCartney, "it is necessary that the temperature of the liquid crystal material of the display be high enough for sufficient display response time." (McCartney, col. 4, lines 9-12). Accordingly, McCartney teaches a temperature sensor and "a digital signal that identifies the voltage needed, at the temperature determined by the temperature sensing element to obtain the correct optical transmission," i.e., the desired response time. (McCartney, col., 4, lines 24-33). As will be well-known to those of skill in the art, an LCD operates on entirely different principles than does a DLD.

The Office Action fails to explain or even address why the teachings of McCartney relative to an LCD would have been applied by one of skill in the art to a DLD as recited in claim 2. For at least this additional reason, the rejection of claim 2 should be reconsidered and withdrawn.

Claim 3 recites "wherein said temperature compensated offset voltage is configured to compensate for a change in spring force exerted on said pixel plate by said flexure at a measured temperature." Claims 14, 25 and 33 recites similar subject matter.

As demonstrated above, to the extent that McCartney teaches an offset voltage generator, that offset voltage is created "to obtain the correct optical transmission" of the liquid crystal material based on temperature. (McCartney, col., 4, lines 24-33). This clearly has nothing to do with "a change in spring force exerted on said pixel plate by said flexure.

200314645-1

10/757,104

Consequently, the cited collection of prior art does not include within its scope the claimed temperature compensated offset voltage "configured to compensate for a change in spring force exerted on said pixel plate by said flexure at a measured temperature." For at least this additional reason, the rejection of claims 3, 14, 25 and 33 should be reconsidered and withdrawn.

Claim 8 recites:

wherein said summing element comprises a summing circuit, wherein said summing circuit is configured to combine said temperature compensated offset voltage with each of a plurality of color specific voltages to produce a temperature compensated voltage corresponding to each of a plurality of colors produced by pixel elements of said DLD.

Claim 21 recites similar subject matter.

In contrast, the cited prior art utterly fails to teach or suggest the claimed summing circuit "configured to combine said temperature compensated offset voltage with each of a plurality of color specific voltages to produce a temperature compensated voltage corresponding to each of a plurality of colors produced by different pixel elements of said DLD." This subject matter is entirely outside the scope and content of the prior art. For at least this additional reason, the rejection of claims 8 and 21 should be reconsidered and withdrawn.

Claim 15 recites "an offset voltage generator, wherein said offset voltage generator is configured to vary said electrostatic force based on said temperature measurement." As demonstrated above, to the extent that McCartney teaches an offset voltage generator, that offset voltage is the voltage "to obtain the correct optical transmission" of the liquid crystal material based on temperature. (McCartney, col., 4, lines 24-33). This clearly has nothing to

200314645-1

10/757,104

do with “vary[ing] said electrostatic force” of a MEMS force plate as recited in claim 15. For at least this additional reason, the rejection of claim 15 should be reconsidered and withdrawn.

Claim 16 recites “wherein said temperature compensated offset voltage generator is configured to produce an offset voltage to compensate for said variation in spring force provided by said flexure.” As demonstrated above, the cited prior art does not teach or suggest an offset voltage generator that “compensate[s] for said variation in spring force provided by said flexure.” For at least this additional reason, the rejection of claim 16 should be reconsidered and withdrawn.

Claim 63 recites “an array of corresponding pixel and force plates; and an offset voltage generator that applies an offset voltage based on said temperature measurement to a global MEMS bias signal used by said force plates.” As demonstrated above, the cited prior art does not teach or suggest an offset voltage generator that “applies an offset voltage based on said temperature measurement to a global MEMS bias signal used by said force plates.” The LCD of McCartney does not include or have relevance to an array of pixel and force plates or an offset voltage generator operating with a global MEMS bias signal used by such force plates. For at least this additional reason, the rejection of claim 63 should be reconsidered and withdrawn.

Claims 10, 11, 23, 30 and 39 were rejected as being unpatentable under 35 U.S.C. § 103(a) over the combined teachings of APA, Romo and U.S. Patent No. 5,903,251 to Mori et al. (“Mori”). This rejection is respectfully traversed for the reasons given above with respect

200314645-1

10/757,104

to the patentability of the independent claims 1, 12, 24 and 31, and for the following additional reasons.

Claim 11 recites "wherein said temperature sensor is configured to measure an average temperature of flexures in an array of DLDs." Claim 30 recites similar subject matter. This subject matter is not taught by, suggested by or within the scope of the prior art of record. For at least this additional reason, the rejection of claim 11 and 30 should be reconsidered and withdrawn.

Claims 4, 17, 27 and 34 were rejected as being unpatentable under 35 U.S.C. § 103(a) over the combined teachings of APA, Romo and U.S. Patent No. 7,038,654 to Naiki et al. ("Naiki"). This rejection is respectfully traversed for the reasons given above with respect to the patentability of the independent claims 1, 12, 24 and 31, and for the following additional reasons.

Claim 4 recites:

wherein said offset voltage generator comprises:
a buffer amplifier;
a low pass filter electrically coupled to said buffer amplifier; and
a scaler/offset amplifier electrically coupled to said low pass filter.

The other claims, 17, 27 and 34, recite similar subject matter.

In this regard, the Office Action cites three elements in three different figures of Naiki. (Action, pp. 13-14). However, in reality, Naiki does not teach or suggest the claimed offset voltage generator. For example, Naiki does not teach a low pass filter as part of an offset voltage generator as claimed. In this regard, the Office Action refers to a digital averaging circuit 13, which clearly is not a low pass filter coupled between a buffer amplifier and a scaler/offset amplifier as claimed. (Action, p. 14 citing Naiki at col. 11, lines 46-49).

200314645-1

10/757,104

For at least this additional reason, the rejection of these claims should be reconsidered and withdrawn.

Claims 40, 42, 44-46 and 49-54 were rejected as being unpatentable under 35 U.S.C. § 103(a) over the combined teachings of McCartney and APA. This rejection is respectfully traversed for at least the following reasons.

Claim 40 recites:

A method of compensating for thermal effects in a DLD comprising:
measuring a temperature of said DLD;
generating a temperature compensated offset voltage associated with an effect said temperature will have on said DLD; and
producing a temperature compensated voltage on said DLD using said temperature compensated offset voltage, wherein applying said temperature compensated voltage to said DLD compensates for said thermal effects.

With regard to claim 40, Applicant wishes to note that: "The materials on which a process is carried out must be accorded weight in determining the patentability of a process. *Ex parte Leonard*, 187 USPQ 122 (Bd. App. 1974)." (See MPEP § 2116).

As noted above, there actually is no admitted prior art in Applicant's specification. Consequently, APA cannot support any rejection of Applicant's claims.

Moreover, McCartney is directed to a liquid crystal display and measures the temperature of the liquid crystal material. (McCartney, col. 4, lines 9-12). Thus, McCartney also does not teach or suggest "measuring a temperature of [a] DLD."

Consequently, McCartney cannot teach or suggest any of the subject matter of claim 40. Neither teaches "measuring a temperature of [a] DLD." Neither teaches "generating a temperature compensated offset voltage associated with an effect said temperature will have on said DLD." Neither teaches "producing a temperature compensated voltage on said DLD

200314645-1

10/757,104

using said temperature compensated offset voltage, wherein applying said temperature compensated voltage to said DLD compensates for said thermal effects.”

Under the analysis required by *Graham v. John Deere*, 383 U.S. 1 (1966), the scope and content of the prior art must first be determined, followed by an assessment of the differences between the prior art and the claim at issue. In the case of claim 40, all of the elements of the method of claim 40 appear to be beyond the scope of the prior art as evidenced by McCartney. The prior art does not provide for a method of compensating for thermal effects in a DLD as recited in claim 40. For at least these reasons, the rejection of claim 40 should be reconsidered and withdrawn.

Claim 50 recites:

A processor readable medium having instructions thereon that are executable by a processor for:
sensing a temperature change of a DLD; and
modifying a voltage provided to said DLD in response to said sensed temperature change.

In contrast, as demonstrated above, the teachings of McCartney fail to teach or suggest any of this subject matter. No reference teaches or suggests executable instructions on a processor readable medium for “sensing a temperature change of a DLD” or for “modifying a voltage provided to said DLD in response to said sensed temperature change.”

Under the analysis required by *Graham v. John Deere*, 383 U.S. 1 (1966), the scope and content of the prior art must first be determined, followed by an assessment of the differences between the prior art and the claim at issue. In the case of claim 50, all of the subject matter of claim 50 appears to be beyond the scope of the prior art as evidenced by McCartney. The prior art does not provide for a processor instructions for sensing

200314645-1

10/757,104

temperature change in a DLD and modifying a voltage provided to the DLD in response. For at least these reasons, the rejection of claim 50 should be reconsidered and withdrawn.

Claim 41 was rejected under 35 U.S.C. § 103(a) over the combined teachings of McCartney, APA and Romo. This rejection is traversed for at least the same reasons given above with respect to the patentability of claim 40.

Claim 43 was rejected under 35 U.S.C. § 103(a) over the combined teachings of McCartney, APA and Naiki. This rejection is traversed for at least the same reasons given above with respect to the patentability of claim 40.

Claims 47 and 48 were rejected under 35 U.S.C. § 103(a) over the combined teachings of McCartney, APA and Mori. This rejection is traversed for at least the same reasons given above with respect to the patentability of claim 40.

Conclusion:

In view of the foregoing arguments, all claims are believed to be in condition for allowance over the prior art of record. Therefore, this response is believed to be a complete response to the Office Action. However, Applicants reserve the right to set forth further arguments supporting the patentability of their claims, including the separate patentability of the dependent claims not explicitly addressed herein, in future papers. Further, for any instances in which the Examiner took Official Notice in the Office Action, Applicants expressly do not acquiesce to the taking of Official Notice, and respectfully request that the

200314645-1


10/757,104

Examiner provide an affidavit to support the Official Notice taken in the next Office Action, as required by 37 CFR 1.104(d)(2) and MPEP § 2144.03.

If the Examiner has any comments or suggestions which could place this application in even better form, the Examiner is requested to telephone the undersigned attorney at the number listed below.

Respectfully submitted,

DATE: December 26, 2007


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I hereby certify that this correspondence is being transmitted to the Patent and Trademark Office facsimile number 571-273-8300 on December 26, 2007. Number of Pages: 33


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